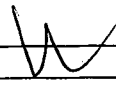
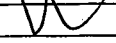


Date: Friday, 05/01/2007 11:31:50 AM
 User: Linda Lacelle

Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: 212/205 HIGH FED X-TUBE ASSEMBLY
Job Number	: 30193		
Estimate Number	: 10254		
P.O. Number	: N/A	Part Number	: D212664101
This Issue	: 05/01/2007	S.O. No.	: N/A
Prsht Rev.	: NC	Drawing Number	: D212-664-141 REV B
First Issue	: N/A	Project Number	: N/A
Previous Run	: 30192	Drawing Revision	: B
	Type : LANDING GEAR	Material	: N/A
Written By	: 	Due Date	: 15/02/2007
Checked & Approved By	: 	Qty:	1
Comment	: Est Rev:E 04.02.16 Reformat KJ/DS	Um:	Each
	: Est Rev:F 06-03-29 Remove Coments on Pick List JLM		

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
----------------	------------------------------	----------------------

1.0	DC	DOCUMENT CONTROL
-----	----	------------------



Comment: DOCUMENT CONTROL

Photocopy bluefile and create labels as per PPP D212-664-101CHG002 003

magna band

2.0	D6005128	Crosstube material
-----	----------	--------------------



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Pick:

Qty Part number Description Batch

1 D6005-128 Crosstube 25665

Check OD = 2.750"; ID = 2.000"

M8 07/01/06 1

3.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE
-----	------------	----------------------------



Comment: MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA113

2-Turn first side as per Folio FA113

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-141.

M8 07/01/06 1

4.0	QC1	INSPECT ALL DIM TO DIM SHEET
-----	-----	------------------------------



Comment: INSPECT ALL DIM TO DIM SHEET

M8 07/01/07 1

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: ☒ Date: 07/05/25

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
07/01/07	S.O	3 dims out of range due to vibration See dim. sheet.	UP 07.01.10 per QSI 042	PART IS OK PER ATTACHED ANALYSIS	UP 07.01.10 per QSI 042	2 07-01-10	UP 07.01.10 per QSI 042	2 07-01-10

NOTE: Date & initial all entries

Date: Friday, 05/01/2007 11:31:50 AM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 212/205 HIGH FED X-TUBE ASSEMBLY

Job Number: 30193

Part Number: D212664101

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA113

2-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-141.

M8 07/01/07

6.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

M8 07/01/07

7.0

QC8

SECOND CHECK



Comment: SECOND CHECK

M8 07/01/07 1

8.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Remove sand and plugs

2-Scribe part # and batch # using vibrating stylus as per Dwg D212-664-141

M8 07/01/10 1

9.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Polish entire outside surface of crosstube

S/50 7-1-12 (1)

10.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

S/50 7-1-12

11.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

S/50 7-1-12 (1)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Friday, 05/01/2007 11:31:51 AM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 212/205 HIGH FED X-TUBE ASSEMBLY

Job Number: 30193

Part Number: D212664101

Job Number:



Seq. #: Machine Or Operation: Description :

12.0

QC5

INSPECT WORK TO CURRENT STEP



John V. 07-01



Comment: INSPECT WORK TO CURRENT STEP

13.0

BENDING

BENDING MACHINE



EL/DP

Comment: BENDING MACHINE

Bend tube as per Dwg D212-664-141 using CNC bender program 212-fw and Folio FT015

7-2-7

14.0

QC5

DIMENSIONAL CHECK



John V. 07-01



Comment: DIMENSIONAL CHECK

15.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Drill pilot holes in tube as per Dwg D212-664-141 using drill Jig DT8548 & DT8549

2-Ream hole to finish size in tube as per Dwg D212-664-141 using drill Jig DT8548 & DT8549. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-141

25 07-03-01

1007-3-5

16.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1 within 24 hours of bending and drilling

50-7-3-5

17.0

QC5

INSPECT WORK TO CURRENT STEP



John V. 04-01 LPI



Comment: INSPECT WORK TO CURRENT STEP

18.0

OUTSIDE SERVICE

OUTSIDE SERVICES



Comment: Sub-Contracting OUTSIDE SERVICES

Liquid Penetrant Inspection as per QSI 038

Issue P/O: *3700*

LPI as per ASTM 1417 Level 2

Attach copy of NDT results to work order

207/05/04 (1)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Friday, 05/01/2007 11:31:51 AM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 212/205 HIGH FED X-TUBE ASSEMBLY

Job Number: 30193

Part Number: D212664101

Job Number:



Seq. #:

Machine Or Operation:

Description :

19.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Inspect for transit damage Ensure copy of NDT results attached to work order.

201/5/10

20.0

QC6

DIMENSIONAL CHECK



Comment: Inspect for damage & ensure results are as per Dwg D212-664-141

207-05-19

21.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside and outside crosstube as per QSI 005 4.2

ET 07-05-22

2-Paint outside crosstube with White Imron as per QSI 005 4.2

22.0

QC14

Inspect Spray Paint



Comment: Inspect Spray Paint

Then, Wrap in plastic bag to protect from scratches

207-05-23

23.0

D2856600

Abrasion Strip



Comment: Qty.: 0.7090 f(s)/Unit Total : 0.7090 f(s)

Pick:

Qty Part number Description Batch

2 D2856-600-851 Abrasion Strip

N/A magna bond B 103628

24.0

D28931

Support



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D2893-1

Support

29073 ET 07-05-24

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Friday, 05/01/2007 11:31:51 AM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 212/205 HIGH FED X-TUBE ASSEMBLY

Job Number: 30193

Part Number: D212664101

Job Number:



Seq. #:

Machine Or Operation:

Description :

25.0

MS2192024

Clamp(per MIL-DTL-8783C)



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:

Qty Part number Description Batch

4 MS21920-24

Clamp 101810

RT 07-05-24

26.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Install abrasion strips as per QSI 035 using DT8581

2-Install supports and clamps as per Dwg D212-664-141. Torque clamps to 80-100 in lb.

RT 07-05-24

27.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

Je 05-25-0

28.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Pick Packing Kit

29.0

D34281

Placard



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

PLACARD

Batch:

B26249

30.0

AN635A

BOLT



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Bolt

Batch:

M103446

CP 07/05/25

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: LD Date: 07/05/23
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Friday, 05/01/2007 11:31:51 AM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 212/205 HIGH FED X-TUBE ASSEMBLY

Job Number: 30193

Part Number: D212664101

Job Number:



Seq. #:

Machine Or Operation:

Description :

31.0

AN636A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total: 4.0000 Each(s)

Bolt

Batch: 4102929

32.0

AN960JD616

Washer



Comment: Qty.: 18.0000 Each(s)/Unit Total: 18.0000 Each(s)

Washer

Batch: 4103641

33.0

MS21042L6

Nut



Comment: Qty.: 6.0000 Each(s)/Unit Total: 6.0000 Each(s)

Nut

Batch: 4101660

34.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

35.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Identify and pack for shipping as per PPP D212-664-101

36.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

Job Completion



410705-25

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order: 30193
Description: Crosstube Assembly (205/212/412 High Fwd)	Part Number: D212-664-141
Inspection Dwg: D212-664-141 Rev: B	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	0.200	+/-0.010	✓			
	R0.063	+/-0.010	✓			
	2.740	+0.005/-0.000	✓			
	5.097	+/-0.030	✓			
	2.304	+0.005/-0.000	✓			
	2.340	+0.005/-0.000	✓			
	2.398	+0.005/-0.000	✓			
	2.448	+0.005/-0.000	✓			
	2.498	+0.005/-0.000	✓			
	2.549	+0.005/-0.000	✓			
	2.599	+0.005/-0.000	✓			
	2.671	+0.005/-0.000	✓			
	2.701	+0.005/-0.000	✓			
SIDE B	0.200	+/-0.010	✓			
	R0.063	+/-0.010	✓			
	2.740	+0.005/-0.000		✓		
	5.097	+/-0.030	✓			
	2.304	+0.005/-0.000		✓		
	2.340	+0.005/-0.000		✓		
	2.398	+0.005/-0.000	✓			
	2.448	+0.005/-0.000	✓			
	2.498	+0.005/-0.000	✓			
	2.549	+0.005/-0.000	✓			
	2.599	+0.005/-0.000	✓			
	2.671	+0.005/-0.000	✓			
	2.701	+0.005/-0.000	✓			
	126.51	+/-0.020	✓			

Measured by: MB	Audited by: JML	Prototype Approval:	N/A
Date: 07/01/06	Date: 07/01/10	Date:	N/A

Rev	Date	Change	Revised by	Approved
A	05.04.27	New Issue (P/O D412-664-101)	KJ/JLM	
B	06.03.15	Tolerance revised for 5.097 per Dwg Rev update	KJ/JLM	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

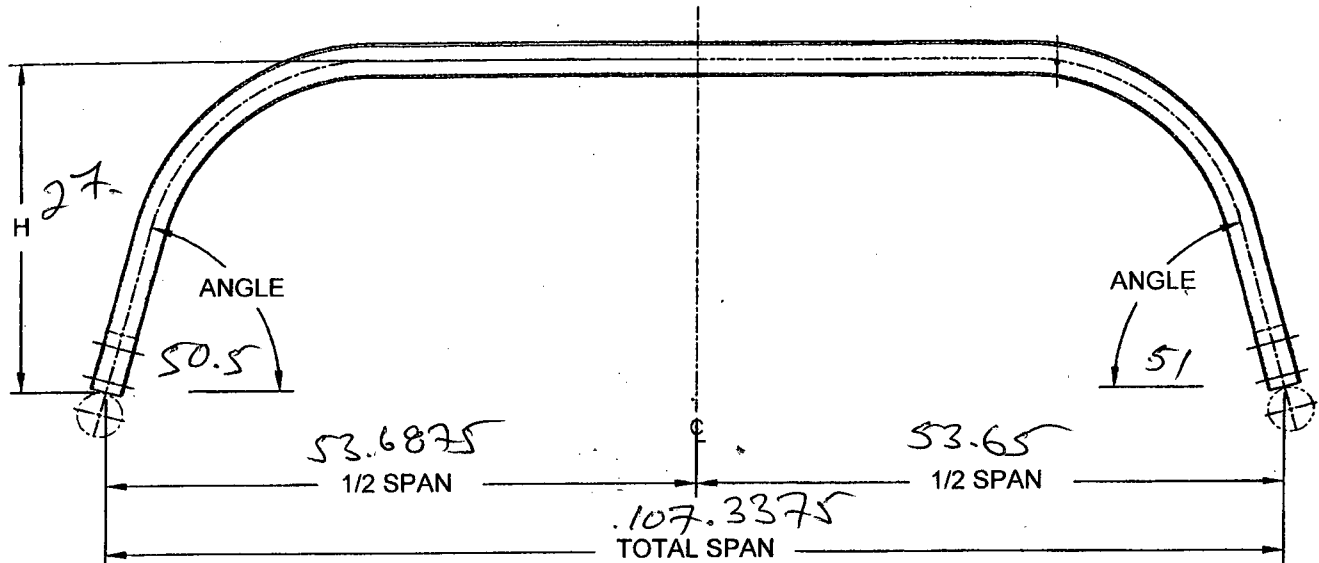
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QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Crosstube Bend Dimension Sheet



PART NUMBER: D212-664-101

BATCH NUMBER: 30193

DRAWING: D212-664-141 REVISION: B

H: 26.96

1/2 SPAN: 53.72

TOTAL SPAN: 107.44

ANGLE: 50°

QC 15: [Signature]

DATE: 07.02.28

QTY: 1

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



DESIGN PH	DRAWN BY PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED 	APPROVED 	DRAWING NO. D212-664-141	REV. B SHEET 1 OF 3
DATE 05.02.04		TITLE XTUBE ASS'Y (205/212/412 HI FWD) NTS	
A	00.12.12	NEW ISSUE	
B	05.02.04	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	

RELEASED
05.06.09

W/O 30693

Qty	Part Number	Description
X	D212-664-141	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)
1	D6005-128	CROSSTUBE
2	D2893-1	SUPPORT
2	D2856-600-851	ABRASION STRIP
4	MS21920-24	CLAMP

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6005-128
FINISHED LENGTH = 126.51±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS
- 9) INSTALL D2856-600-851 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D2893-1 SUPPORT, PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) IT IS OPTIONAL TO SEAL EDGES OF SUPPORTS USING SIKAFLEX-241/291 SEALANT.
- 12) TORQUE CLAMPS 80 TO 100 IN-LB.

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

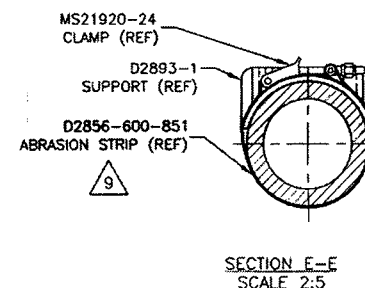
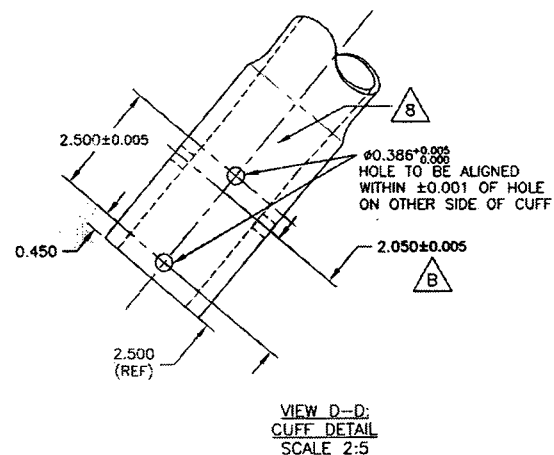
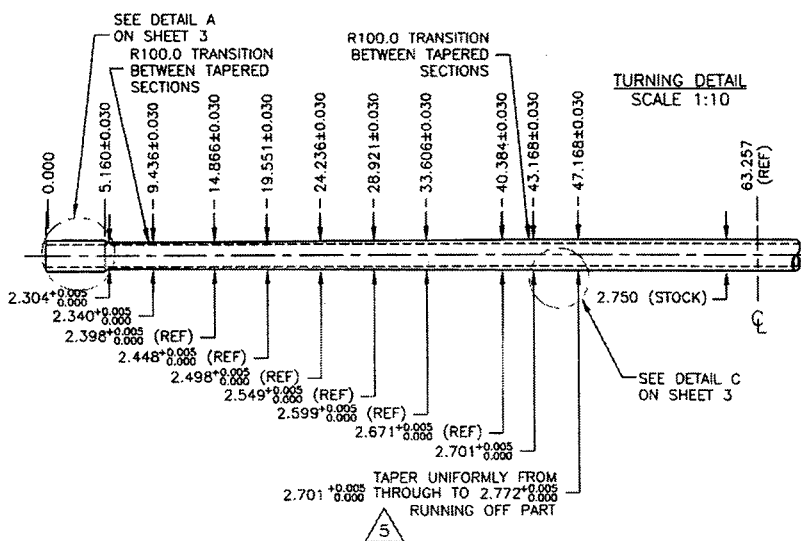
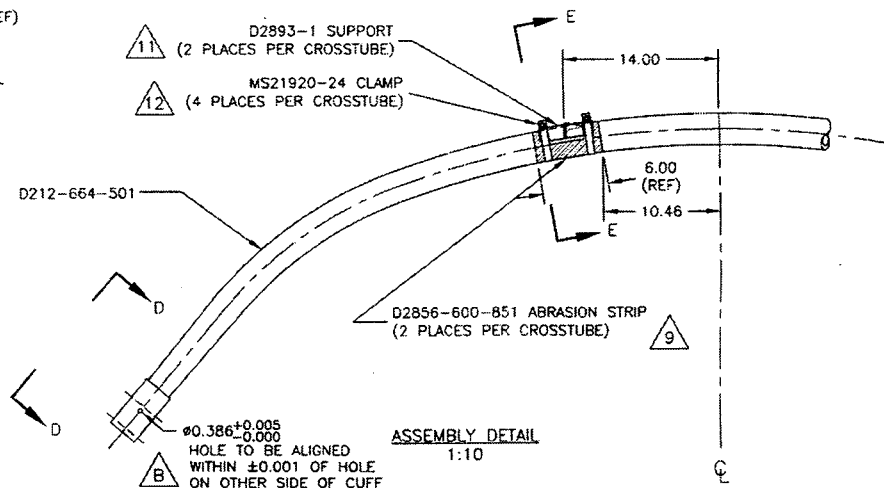
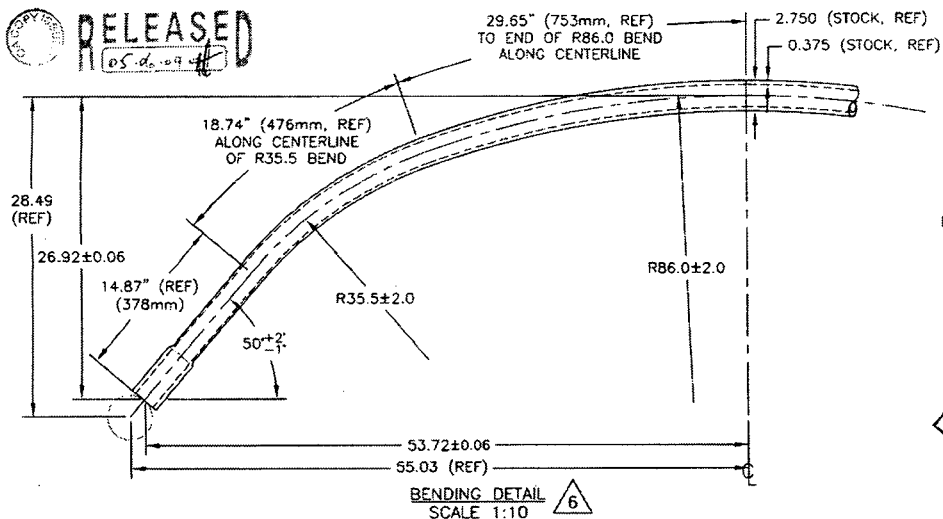
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

RELEASED



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THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.		CHECKED #	APPROVED #			
				TITLE	SCALE	
DATE 05.02.04				XTUBE ASS'Y (205/212/412 HI FWD)	1:10	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

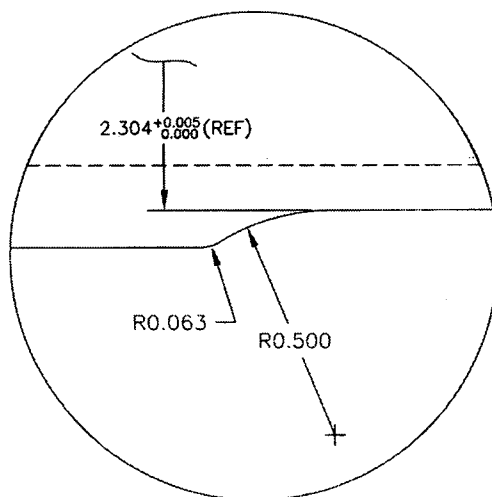
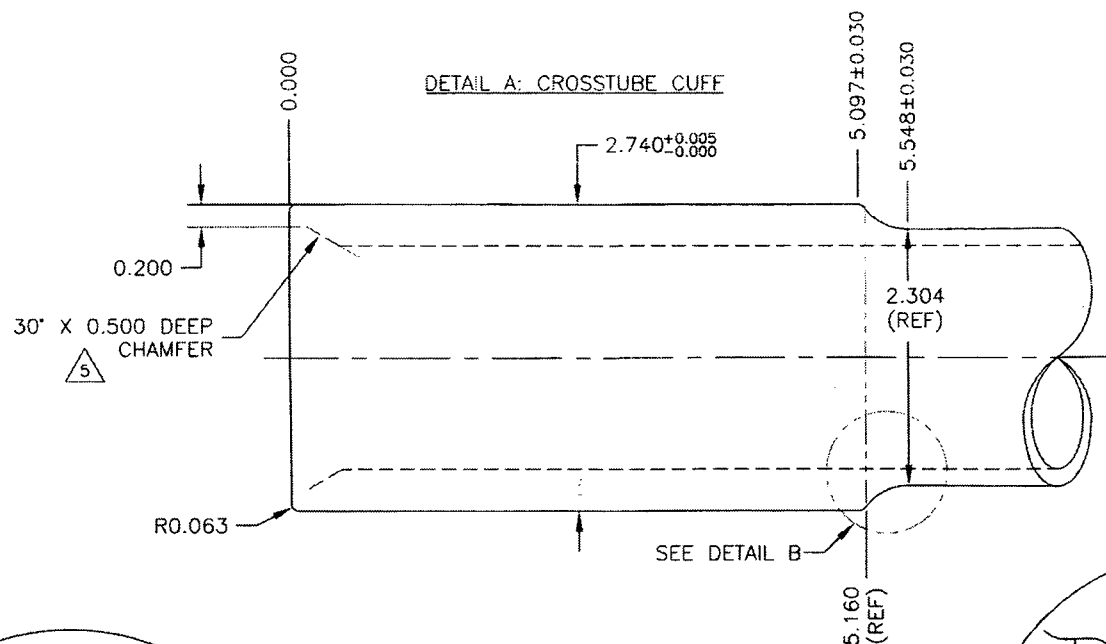
QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

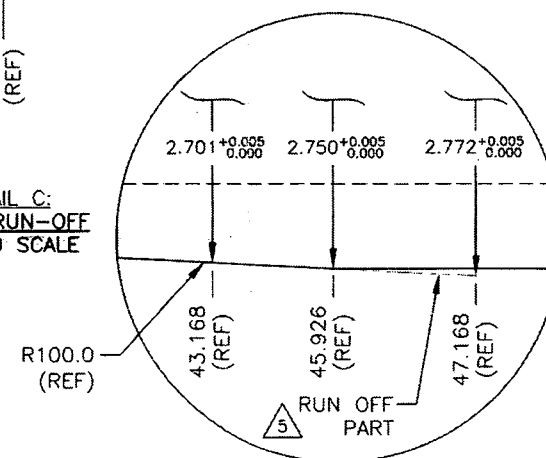
NOTE: Date & initial all entries



RELEASED
05 06 09 41



DETAIL C:
TAPER RUN-OFF
NOT TO SCALE



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DESIGN	PH	DRAWN BY	FH	DART	DART AEROSPACE LTD.
CHECKED	#	APPROVED	#	DRAWING NO.	0212-664-141
DATE	05.02.04	TITLE	XTUBE ASS'Y (205/212/412 HI FWD)	REV. 8	SHEET 3 OF 3
		SCALE	1:1		

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

SECTION	Crosstube	Damage Tolerance	O.D. (in)	I.D. (in)	Area (in ²)	Inertia (in ⁴)
A-A	Bell Fwd	0.000	2.750	2.000	2.798	2.022
	Bell Fwd w/ dam. tol.	0.005			2.788	2.003
	Dart Fwd	0.000	2.750	2.000	2.798	2.022
	Dart Fwd w/ dam. tol.	0.015			2.692	1.894
B-B	Bell Fwd	0.000	2.706	2.000	2.609	1.847
	Bell Fwd w/ dam. tol.	0.005			2.599	1.828
	Dart Fwd	0.000	2.701	2.000	2.588	1.827
	Dart Fwd w/ dam. tol.	0.015			2.444	1.708
C-C	Bell Fwd	0.000	2.605	2.000	2.188	1.475
	Bell Fwd w/ dam. tol.	0.015			2.158	1.424
	Dart Fwd	0.000	2.599	2.000	2.164	1.454
	Dart Fwd w/ dam. tol.	0.015			2.020	1.339
D-D	Bell Fwd	0.000	2.555	2.000	1.986	1.306
	Bell Fwd w/ dam. tol.	0.015			1.956	1.258
	Dart Fwd	0.000	2.549	2.000	1.961	1.287
	Dart Fwd w/ dam. tol.	0.015			1.817	1.173
E-E	Bell Fwd	0.000	2.504	2.000	1.783	1.144
	Bell Fwd w/ dam. tol.	0.010			1.763	1.113
	Dart Fwd	0.000	2.499	2.000	1.763	1.129
	Dart Fwd w/ dam. tol.	0.015			1.619	1.017
F-F	Bell Fwd	0.000	2.404	2.000	1.397	0.854
	Bell Fwd w/ dam. tol.	0.010			1.377	0.825
	Dart Fwd	0.000	2.394 *	2.000	1.360	0.827
	Dart Fwd w/ dam. tol.	0.012			1.222	0.728
G-G	Bell Fwd	0.000	2.300	2.000	1.013	0.588
	Bell Fwd w/ dam. tol.	0.010			0.993	0.562
	Dart Fwd	0.000	2.300 **	2.000	1.013	0.588
	Dart Fwd w/ dam. tol.	0.012			0.875	0.492
H-H	Bell Fwd	0.000	2.750	2.000	2.798	2.022
	Bell Fwd w/ dam. tol.	0.030			2.738	1.909
	Dart Fwd	0.000	2.734 ***	2.000	2.729	1.957
	Dart Fwd w/ dam. tol.	0.030			2.555	1.780

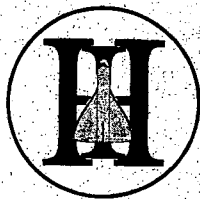
* WAS 2.399
 ** WAS 2.304
 *** WAS 2.740

SECTION **	Cross tube	Bending Ultimate (lb*in)	Bending Yield (lb*in)	Tension Ultimate (lb)	Tension Yield (lb)	Shear Ultimate (lb)
A-A	Bell fwd w/ DT	96147	81580	184007	156127	117095
	Dart fwd w/ DT	106069	90916	207296	177682	110379
	Margin of Safety	0.10	0.11	0.13	0.14	-0.06
B-B	Bell fwd w/ DT	89184	75671	171563	145568	109176
	Dart fwd w/ DT	97364	83455	188197	161312	100209
	Margin of Safety	0.09	0.10	0.10	0.11	-0.08
C-C	Bell fwd w/ DT	72166	61232	142437	120856	90642
	Dart fwd w/ DT	79333	68000	155504	133289	82801
	Margin of Safety	0.10	0.11	0.09	0.10	-0.09
D-D	Bell fwd w/ DT	64967	55124	129063	109508	82131
	Dart fwd w/ DT	70890	60763	139937	119946	74512
	Margin of Safety	0.09	0.10	0.08	0.10	-0.09
E-E	Bell fwd w/ DT	58674	49784	116349	98721	74040
	Dart fwd w/ DT	62696	53739	124673	106863	66384
	Margin of Safety	0.07	0.08	0.07	0.08	-0.10
F-F	Bell fwd w/ DT	45310	38445	90908	77134	57851
	Dart fwd w/ DT	46818	40129	94065	80627	50087
	Margin of Safety	0.03	0.04	0.03	0.05	-0.13
G-G	Bell fwd w/ DT	32243	27358	65549	55617	41713
	Dart fwd w/ DT	32925	28222	67381	57755	35878
	Margin of Safety	0.02	0.03	0.03	0.04	-0.14
H-H	Bell fwd w/ DT	91610	77729	180707	153327	114995
	Dart fwd w/ DT	100280	85954	196733	168629	104754
	Margin of Safety	0.09	0.11	0.09	0.10	-0.09

Excerpt from SR-D212-664-1
 Rev. A, Tables 1 & 3,
 WITH AREA OF TAPER
 0.004" UNDER TOLERANCE
 AND AREA OF CURF 0.006"
 UNDER TOLERANCE, ALL
 MARGINS ARE STILL POSITIVE,
 THEREFORE TUBE IS
 SUFFICIENTLY STRONG

CP
 07.01.16





HeathAir

INTERNATIONAL (1991) INC.

681 Ave. Lepine, Dorval, Québec H9P 1G3
Tél.: (514) 636-1000 • Fax: (514) 636-0031

W.O. N° 36318

A.M.O. Number: 46/90

NON-DESTRUCTIVE TESTING REPORT

AIRCRAFT / COMPONENT INFORMATION

REGISTRATION:

MODEL/TYPE:

SERIAL NUMBER:

TOTAL HR/LDG:

OPERATED BY:

BASED AT:

INSPECTION REQUIREMENTS

Carry out FPI of (8) cross tube (external surface) as per ASTM E-1417-05 and the Dart QSI 038, Section 4.1.1 (on file at client) - parts delivered to HeathAir.

Qty (4) P/N D212-664-201 S/N's B31363, B31359, B30422 & B31362.

Qty (4) P/N D212-664-101 S/N's B30418, B30416, B30194 & B30193.

☐ RADIOGRAPHY

☐ ULTRASONIC

☒ PENETRANT

☐ MAGNETIC PARTICLE

☐ EDDY CURRENT

INSPECTION REPORT

Fluorescent penetrant inspection was performed in accordance with the above requirements on (8) cross tubes.

Note: A Level 3 penetrant was substituted for the requested Level 2 (3 is more sensitive)
Ardrox 970P25E Batch #04B503.

(8) cross tubes PASSED inspection.

THE MAINTENANCE DESCRIBED ABOVE HAS BEEN PERFORMED IN ACCORDANCE WITH
THE APPLICABLE STANDARDS OF AIRWORTHINESS

INSPECTED BY:

S. FLETCHER

DATE May 8, 2007

INSPECTION
STAMP(S) Not Required

CUSTOMER INFORMATION

CUSTOMER: Dart Aerospace

P.O. NUMBER 00003700

ADDRESS:

CONTACT NAME:

LABOUR

@

\$

MATERIALS

@

TRAVEL EXPENSES

@

GST

HOTEL EXPENSES

@

PST

INVOICE NO.

TOTAL \$

DART**RELEASED**

07.04.24

DESIGN PH	DRAWN BY PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED GP	APPROVED [Signature]	DRAWING NO. D212-664-141	REV. C SHEET 1 OF 3
DATE 07.03.08		TITLE XTUBE ASS'Y (205/212/412 HI FWD) NTS	
A	00.12.12	NEW ISSUE	
B	05.02.04	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	
C	07.03.08	REMOVE -851 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	

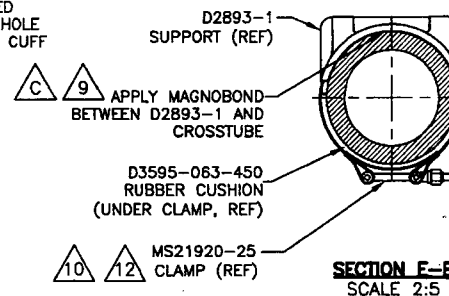
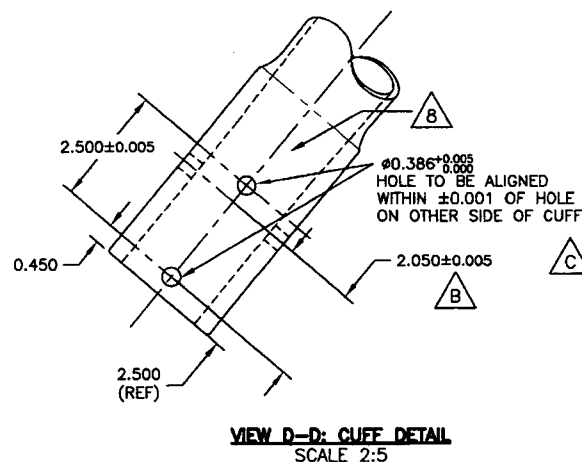
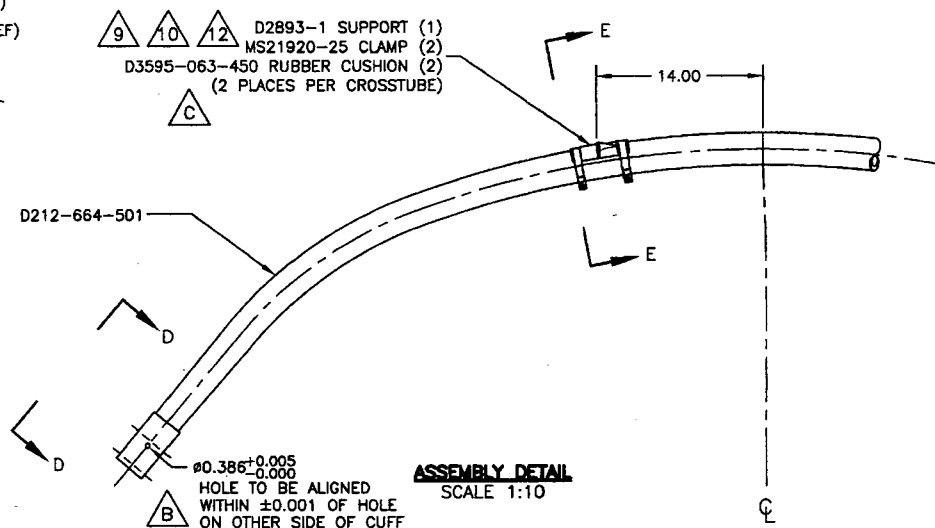
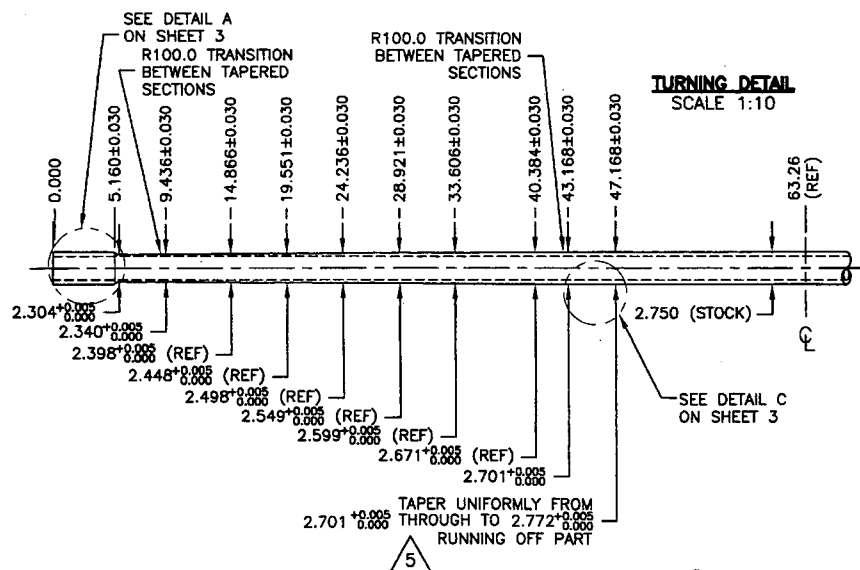
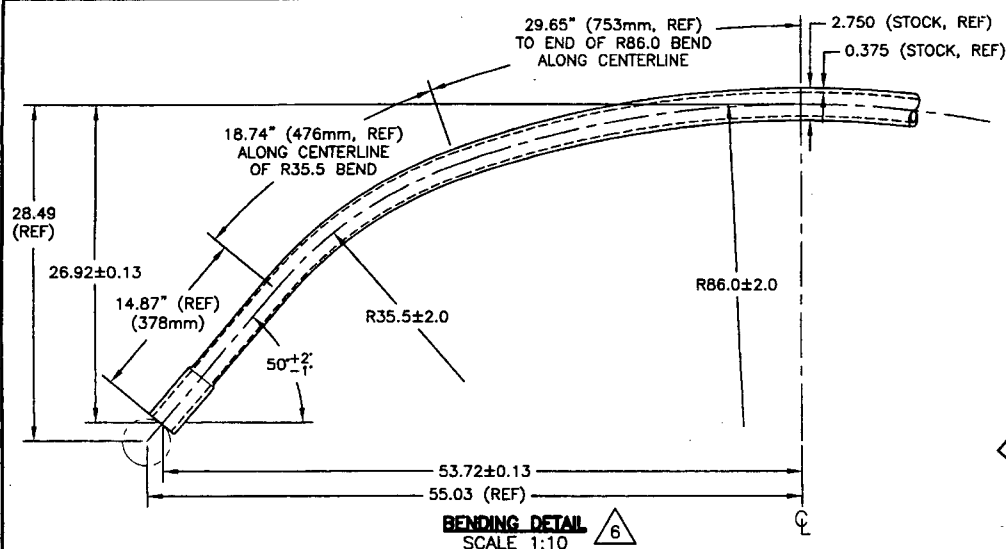
Qty	Part Number	Description
X	D212-664-141	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)
1	D6005-128	CROSSTUBE
2	D2893-1	SUPPORT
4	D3595-063-450	RUBBER CUSHION
4	MS21920-25	CLAMP (OR MS21920-26)
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6005-128
FINISHED LENGTH = 126.51±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 10) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT
- 11) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 12) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

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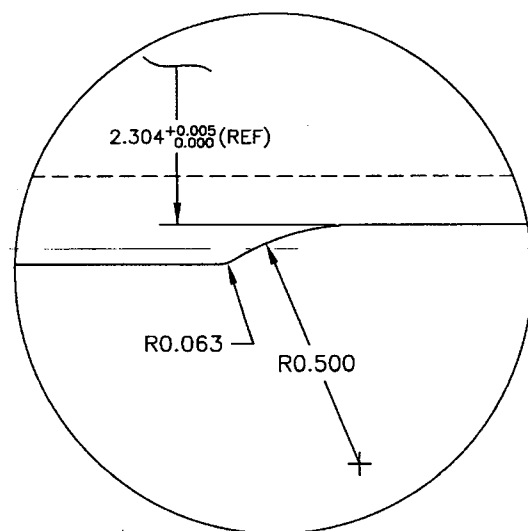
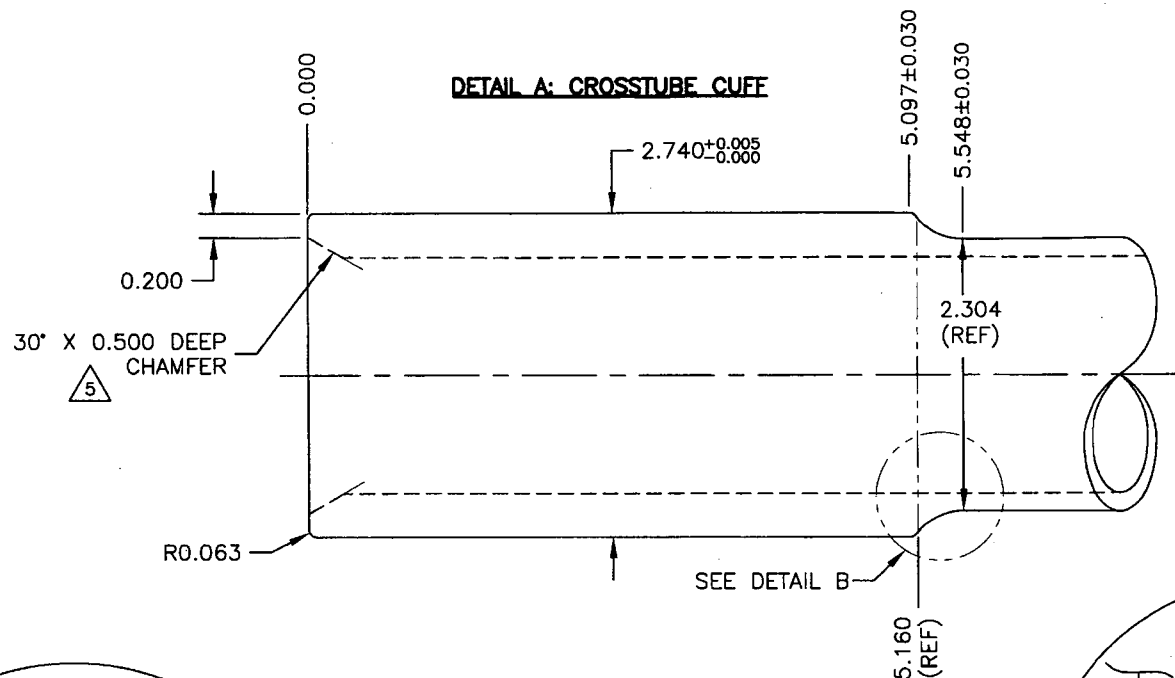
RELEASED

07.04.24

COPYRIGHT © 2000 BY DART AEROSPACE LTD.		DESIGN	PH	DRAWN BY	PH	DART	DART AEROSPACE LTD. WARRICKSURY, OXFORD, CANADA
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.		CHECKED	90	APPROVED	4	DRAWING NO.	REV. C
		DATE	07.03.08			D212-664-141	SHEET 2 OF 3
						TITLE	SCALE
						XTUBE ASS'Y (205/212/412 HI FWD)	1:10

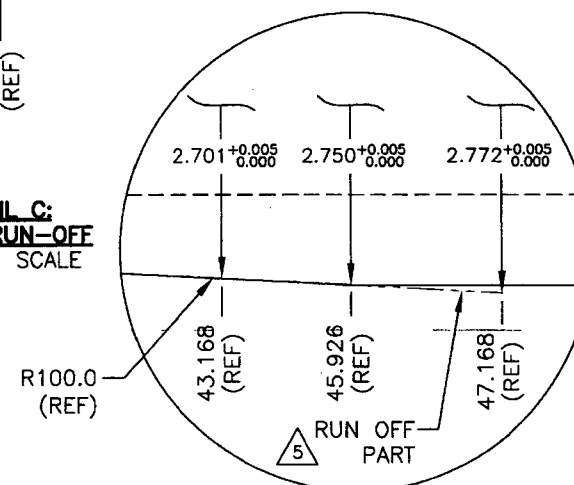
RELEASED
67.04.24 (P)
PER PLAN 883

DETAIL A: CROSSTUBE CUFF



**DETAIL B: CUFF
TRANSITION**
SCALE 4:1

**DETAIL C:
TAPER RUN-OFF**
NOT TO SCALE



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WARRICKSBURY, OXFORD, CANADA

CHECKED

J

APPROVED

DRAWING NO.
D212-664-141

REV. C
SHEET 3 OF 3

DATE

07.03.08

TITLE

XTUBE ASS'Y (205/212/412 HI FWD) 1:1

Date: Monday, 1/8/2007 11:11:06 AM
User: Kim Johnston

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services
Job Number : 30193
Estimate Number : 10254
P.O. Number :
This Issue : 1/8/2007 S.O. No. :
Prsht Rev. : NC
First Issue : 1/5/2007 Type : LANDING GEAR
Previous Run : 30192
Drawing Name : 212/205 HIGH FED X-TUBE ASSEMBLY
Part Number : D212664101
Drawing Number : D212-664-141 REV B
Project Number : N/A
Drawing Revision : B
Material :
Due Date : 2/15/2007 Qty: 1 Um: Each
Written By :
Checked & Approved By :
Comment : Est Rev:E 04.02.16 Reformat KJ/DS
Est Rev:F 06-03-29 Remove Coments on Pick List JLM

Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 DC DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Photocopy bluefile and create labels as per PPP D212-664-101CHG002

07.05.04 020425

2.0 D6005128 Crosstube material



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part number Description Batch

1 D6005-128 Crosstube

Check OD = 2.750"; ID = 2.000"

3.0 MORI SEIKI MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA113

2-Turn first side as per Folio FA113

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-141.

4.0 QC1 INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

REFERENCE ONLY